WHAT IS CLAIMED IS:

1. A method for casting a metal article, said process comprising the steps of:

providing a mold body having a longitudinal axis with a hollow bore defining a mold cavity extending axially through said body from a first open end to a second closed end of said mold body, said second end of said body having a substantially frustoconical shape defining a surface converging toward an axial center of said mold body;

orienting said mold body in a near vertical orientation with respect to said longitudinal axis in order for the casting metal to flow on the mold lining surface, without splashing, to said closed end of the mold and rotating said mold about a vertical axis;

introducing a molten metal into said mold cavity while continuously rotating said mold body at a rotational speed sufficient to distribute said molten metal along said frustoconical shaped surface; and

pivoting said mold body to orient said longitudinal axis of said mold body at an angle with respect to said vertical orientation while continuously rotating said mold body about its longitudinal axis at a rotational speed to distribute said molten metal along a length of said hollow bore in a horizontal orientation; and

solidifying said molten metal to produce a centrifugal cast hollow metal article having a substantially cylindrical shaped hollow body with a closed frustoconical hollow end.

2. The method of claim 1, wherein said body of said cast metal article has a substantially uniform wall thickness.

3. The method of claim 1, comprising rotating said mold body while in said vertical orientation at a speed whereby said molten metal forms a parabola shape against said frustoconical surface, and where said mold body is pivoted to a substantially horizontal position.

4. The method of claim 1, comprising rotating said mold body while in said vertical orientation and solidifying a portion of said molten metal against said frustoconical surface to form said closed frustoconical end of said article, and thereafter rotating said mold body to said horizontal position.

5. The method of claim 1, comprising forming a compacted, densified layer of particulate refractory material on an inner surface of said mold body and thereafter introducing said molten metal into said mold body.

6. The method of claim 1, further comprising the steps of:

rotating said mold about its longitudinal axis and introducing an amount of a dry binderless particulate refractory material into said mold cavity;

distributing said refractory material along said mold cavity and contacting said refractory material with a blade having a substantially flat surface at an angle sufficient to redistribute, compact and densify said refractory material and form a compacted layer, and

contacting said compacted layer with said blade, where said blade has a shaping edge to remove excess refractory material and shape said compacted layer.

7. The method of claim 6, wherein said shaping edge of said blade has a shape complementing an inner profile of said mold cavity and wherein said process forming said shaped compacted layer has a substantially uniform thickness.

8. The method of claim 6, wherein said blade has a front face and rear face and an outer face extending at an incline between said front face and said rear face to form a sharp edge, said method comprising rotating said mold body in a first direction and contacting said outer face of said blade with said refractory material at a positive angle to compact and densify said refractory material.

9. The method of claim 8, comprising rotating said mold body in a second direction and contacting said sharp edge of said blade with said refractory material at a positive angle to remove a portion of said refractory material and shape said compacted layer of said compacted material.

10. A method for casting a metal article, said process comprising the steps of:

providing a mold body having a longitudinal axis with a hollow bore defining a mold cavity extending axially through said body from a first open end to a second closed end of said mold body, said second end of said body having a substantially frustoconical shape defining a surface converging toward an axial center of said mold body;

introducing a contouring apparatus into said mold body, said contouring apparatus having a contouring blade;

orienting said mold body at an incline and introducing a first amount of dry binderless particulate refractory particles into said

mold body while rotating said mold body and distributing said particles in said closed second end;

orienting said mold body in a substantially horizontal position and introducing a trough with a second amount of dry binderless refractory particles while rotating said mold body to distribute said particles and form a loose layer;

contacting said contouring blade with said loose layer to compact, redistribute and machine said particles and form an air impervious mold lining of said particles;

introducing a molten metal into said mold cavity while continuously rotating said mold body at a rotational speed sufficient to distribute said molten metal along said frustoconical shaped surface, where said mold body is oriented at a near vertical angle to introduce said molten metal into said frustoconical shaped section substantially without splashing of said molten metal; and

pivoting said mold body to orient said longitudinal axis of said mold body at an angle with respect to said vertical orientation while continuously rotating said mold body about its longitudinal axis at a rotational speed to distribute said molten metal along a length of said hollow bore in a horizontal orientation; and

solidifying said molten metal to produce a centrifugal cast hollow metal article having a substantially cylindrical shaped hollow body with a closed frustoconical hollow end.

11. The method of claim 10, comprising orienting said mold body in a near vertical position while introducing said molten metal into said mold body without splashing, and pivoting said mold body to a substantially horizontal position to distribute said molten metal along a length of said mold body.

12. The method of claim 10, further comprising the step of rocking said mold body in a back and forth motion while rotating said mold body to distribute said molten metal.

13. The method of claim 10, further comprising the steps of:

distributing and solidifying a selected amount of said molten metal in said closed second end of said mold body while said mold body is in said vertical orientation; and

thereafter pivoting said mold body to a substantially horizontal position to cause said molten metal to be distributed and to solidify along said length of said mold body at a selected rate to form said hollow body having a predetermined wall thickness.

14. A centrifugal molding apparatus comprising:

a hollow mold body with a mold cavity having a first open end and a second closed end, said second end having a substantially frustoconical shaped inner surface; and

a support assembly supporting said mold body and being capable of pivoting said mold body between a vertical orientation for pouring with respect to a longitudinal axis of said mold body and a horizontal position, and a drive device for rotating said mold assembly about its longitudinal axis at a rotational speed sufficient to cast a molten metal while rotating said mold body in said horizontal position.